RESONANCE EFFECTS IN NEUTRON SCATTERING LENGTHS*

by

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Abstract

The nature of neutron scattering lengths is described and the nuclear effects giving rise to their variation is discussed. Some examples of the shortcomings of the available nuclear data base, particularly for heavy nuclei, are given. Methods are presented for improving this data base, in particular for obtaining the energy variation of the complex coherent scattering length from long to sub–Ångstrom wave lengths from the available sources of slow neutron cross section data. Examples of this information are given for several of the rare earth nuclides. Some examples of the effect of resonances in neutron reflection and diffraction are discussed. This report documents a seminar given at Argonne National Laboratory in March 1989.

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